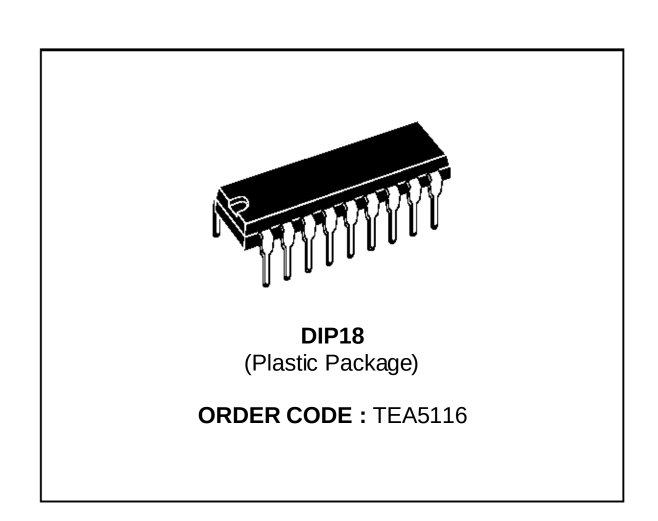


TEA5116

5 CHANNELS VIDEO SWITCH

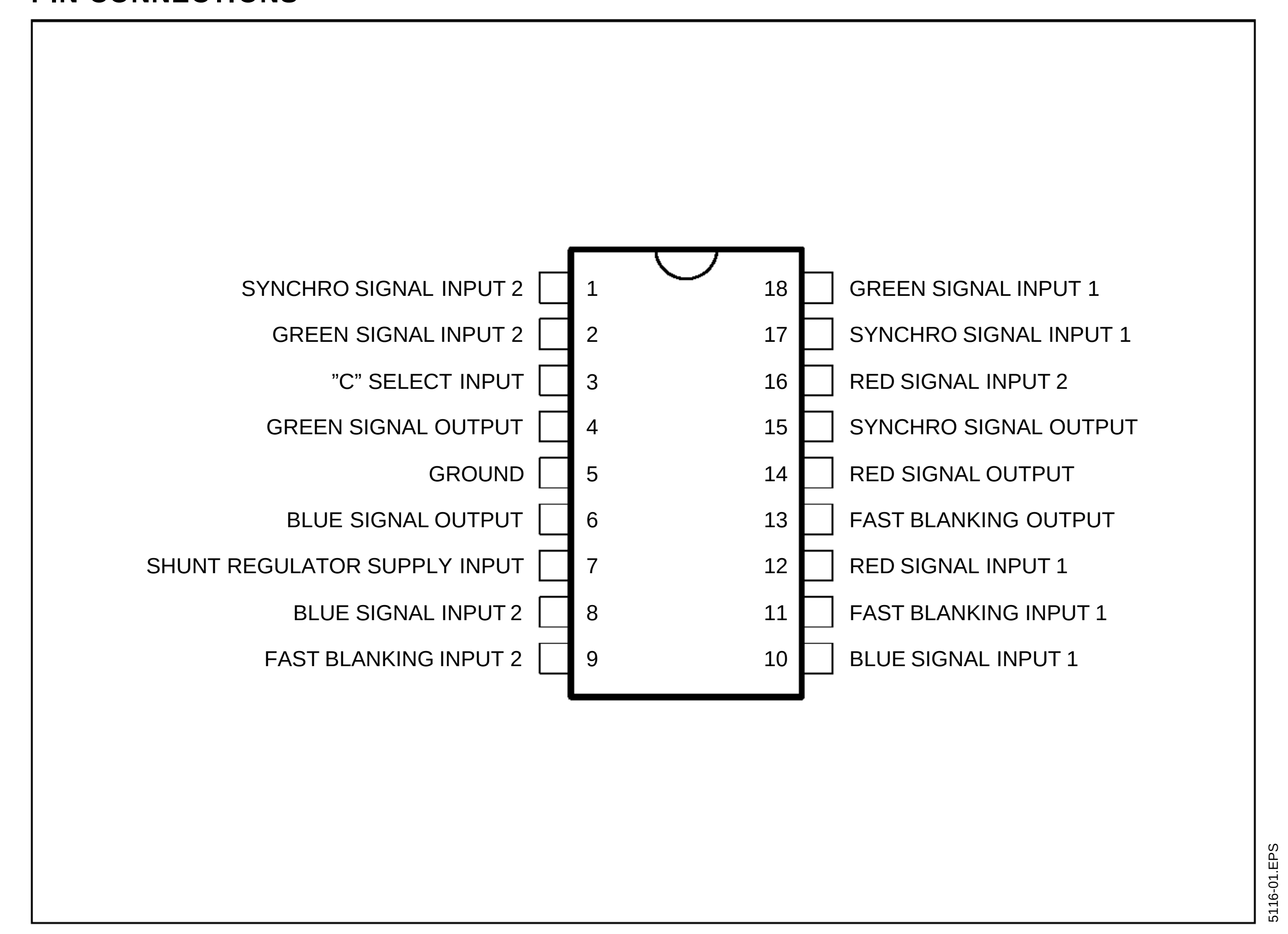
- EACH CHANNEL EXCEPT FAST BLANKING HAS 6dB GAIN
- R, G, B AND VIDEO SIGNALS ARE CLAMPED TO THE SAME REFERENCE VOLTAGE IN ORDER TO HAVE NO OUTPUT DIFFERENTIAL VOLTAGE WHEN SWITCHING
- ALL INPUT LEVELS COMPATIBLE WITH NFC 92250 AND EN 50049 NORMS
- 30MHz BAND WIDTH FOR R, G, B SIGNALS
- INTERNAL 6.7V SHUNT REGULATOR FOR :
  - LOW IMPEDANCE LOADS,
  - POWER DISSIPATION LIMITATION
- THE FIVE CHANNELS ARE SIMULTANEOUSLY SWITCHED BY ONLY ONE SELECT INPUT



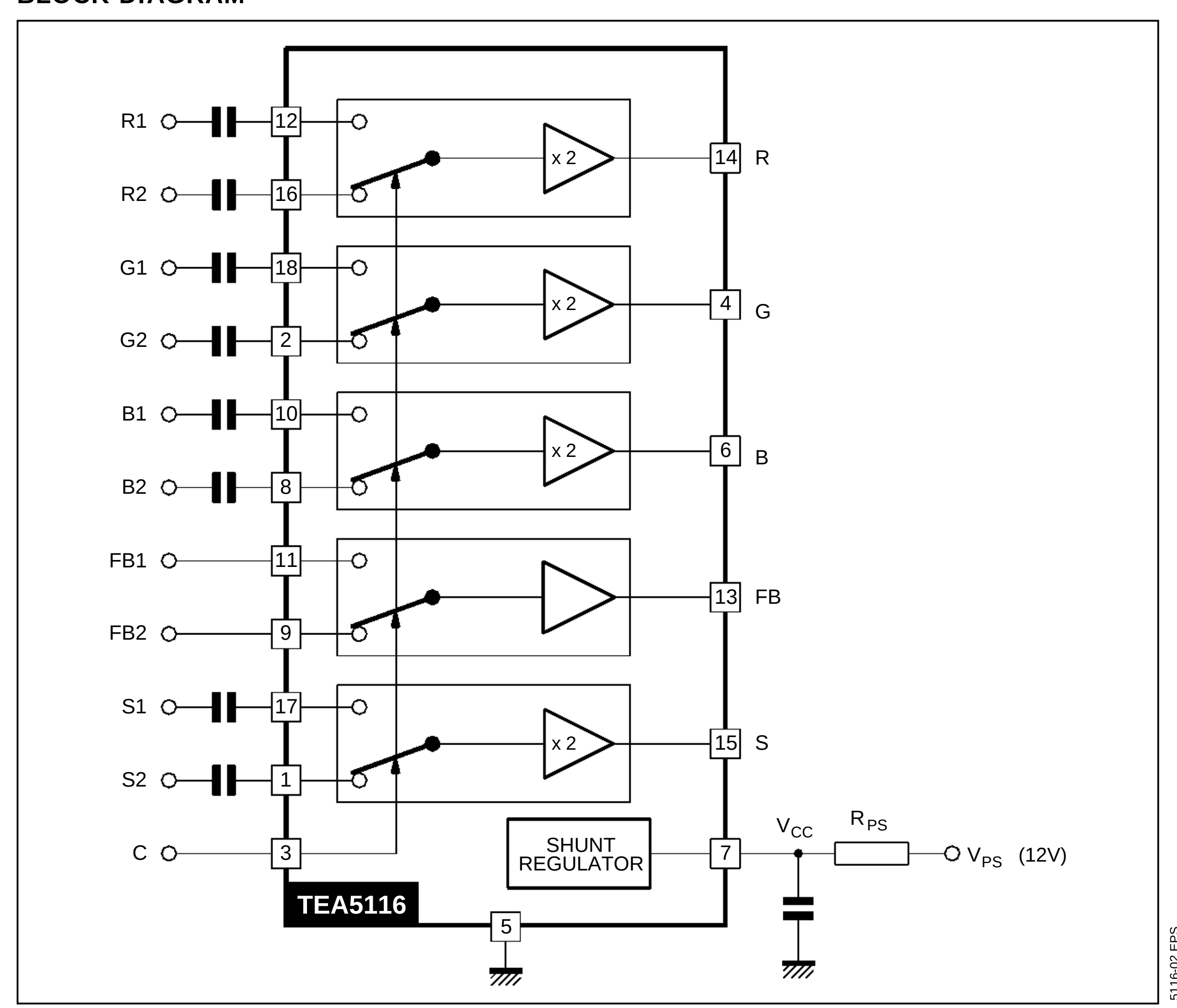
DIP18
(Plastic Package)

ORDER CODE : TEA5116

PIN CONNECTIONS



BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
I_{CC}	Supply Current (see note)	150	mA
V_{in}	Input Voltage (all inputs)	– 0.5 to V_{CC} + 0.5	V
T_{oper}	Operating Temperature Range	0, 70	°C
T_j	Junction Temperature	– 40, + 150	°C
T_{stg}	Storage Temperature	– 40, + 150	°C

5116-01.TBL

Note : Minimum output load is 300 Ω in case of all outputs loaded.

THERMAL DATA

Symbol	Parameter	Value	Unit
$R_{th\ (j-a)}$	Junction-ambient Thermal Resistance	70	°C/W

5116-02.TBL

ELECTRICAL CHARACTERISTICS

T_{amb} = + 25 °C, I_{CC} = 120 mA ; Load value = 150 Ω
(sequentially switched) (unless otherwise specified, refer to test circuit page 7)

Symbol	Parameter		Min.	Typ.	Max.	Unit
V_{CC}	Internal Shunt Regulator	I_{CC} = 120 mA I_{CC} = 90 mA I_{CC} = 150 mA	6.3 6.2 6.2	6.7	7.2 7.3 7.3	V V V

R, G, B Switches (pins 4, 6, 14) (Time Measurement Conditions : Δ inputs RGB = 0.7 V_{pp} ; C pulse amplitude = 3 V)

Symbol	Parameter		Min.	Typ.	Max.	Unit
V_C	DC Output Voltage (no input voltage)	$T_{junction}$ = 25 °C $T_{junction}$ stabilized		0.9 1.2	1.25	V
V_{AC}	Max Output Swing Voltage		2	4		V_{pp}
B	Bandwidth (– 3dB) (input voltage 0.7V_{pp})		20	30		MHz
A_v	Gain of Each Channel (input voltage 0.7V_{pp} ; f = 1MHz)		5.5	6	6.5	dB
A_{dc}	Gain Difference between any two R, G, B Channels (input voltage 0.7V_{pp} ; f = 1MHz)			0.1	0.5	dB
	Input Swing			0.7 V ± 3dB		
z_{ic}	DC Input Impedance			10		kΩ
z_{oc}	Dynamic Output Impedance (input voltage 0.7 V_{pp} ; f = 1MHz) with R_{load} = 300Ω			10		Ω
	Crosstalk between any inputs (R1 and R2 or B1 and B2 or G1 and G2) (input voltage 0.7V_{pp} ; f = 1MHz).		45	55		dB
	Crosstalk between any outputs (input voltage 0.7V_{pp} ; f = 1MHz)		40	55		dB
t_{dc}	Delay time between R, G, B inputs and RGB outputs.			10		ns
t_{sr1}	Switching Rise Time between FB1 Input Signal and R, G, B Output Signal (input signal on RGB1)			45		ns
t_{sf1}	Switching Fall Time between FB1 Input Signal and R, G, B Output Signal (input signal on RGB1)			25		ns
t_{sr2}	Switching Rise Time between FB2 Input Signal and R, G, B Output Signal (input signal on RGB2)			55		ns
t_{sf2}	Switching Fall Time between FB2 Input Signal and R, G, B Output Signal (input signal on RGB2)			25		ns

Fast Blanking Switch (pin 13)
(time measurement conditions : FB input pulse amplitude = 2 V, C pulse amplitude = 3V))

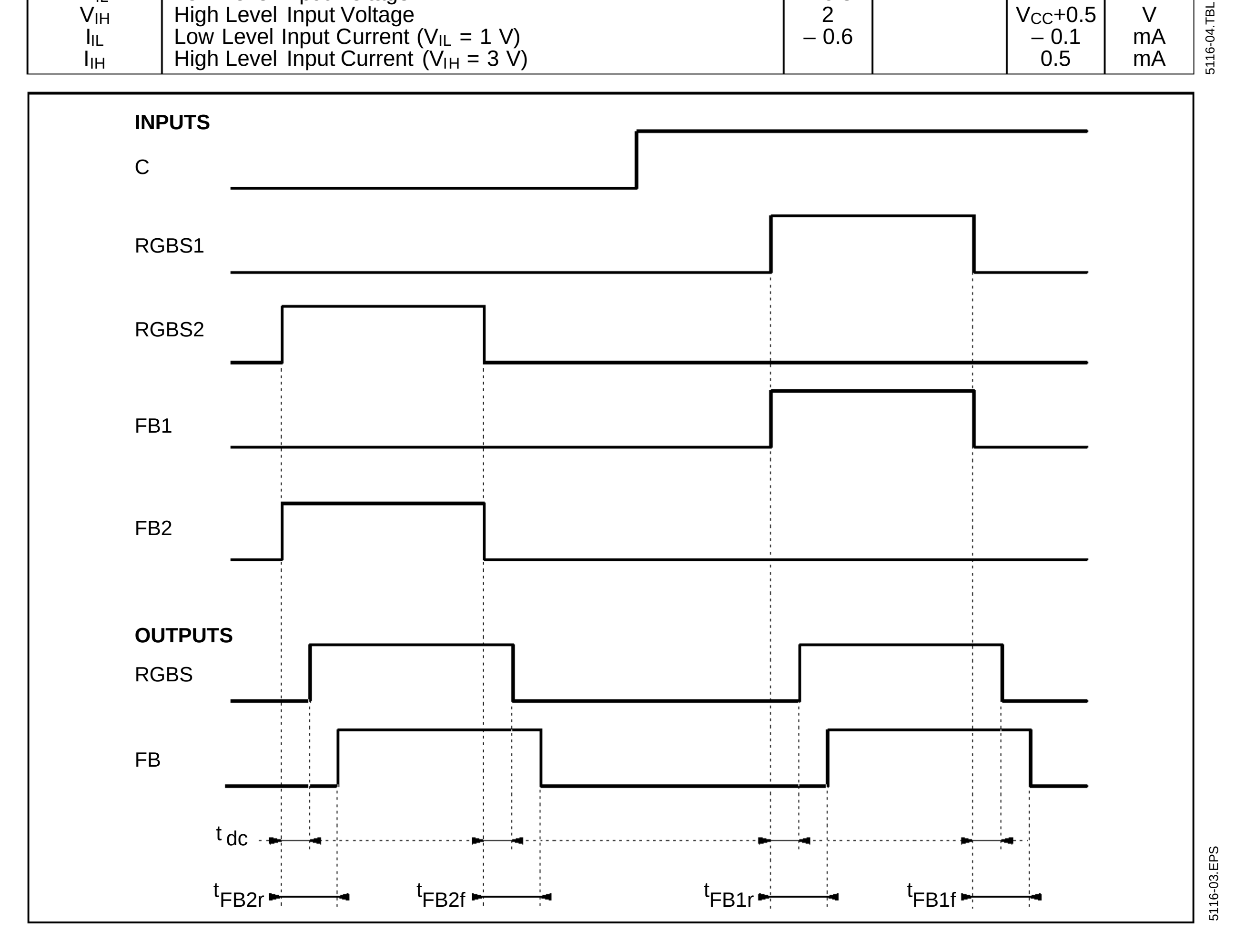
Symbol	Parameter		Min.	Typ.	Max.	Unit
V_{IL} V_{IH} V_{OL} V_{OH}	Low Level Input Voltage High Level Input Voltage Low Level Output Voltage High Level Output Voltage	$T_{junction}$ = 25°C $T_{junction}$ stabilized	- 0.5 1 1.4 1.5	 1.7 1.9	0.4 V_{CC}+0.5 V_{CC}+0.5 3.5	V V V V V
	Dynamic Output Impedance : with R_{load} = 300Ω			10		Ω
t_{FB1r}	Delay Rise Time between FB1 Input and FB Output			60	110	ns
t_{FB1f}	Delay Fall Time between FB1 Input and FB Output			40	60	ns
t_{FB2r}	Delay Rise Time between FB2 Input and FB Output			60		ns
t_{FB2f}	Delay Fall Time between FB2 input and FB Output			40		ns
t_{SFB1r}	Switching Rise Time between C Input and FB Output (input signal on FB1 input)			75		ns
t_{SFB1f}	Switching Fall Time between C Input and FB Output (input signal on FB1 input)			50		ns
t_{SFB2r}	Switching Rise Time between C Input and FB Output (input signal on FB2 input)			85		ns
t_{SFB2f}	Switching Fall Time between C Input and FB Output (input signal on FB2 input)			50		ns

5116-03.TBL

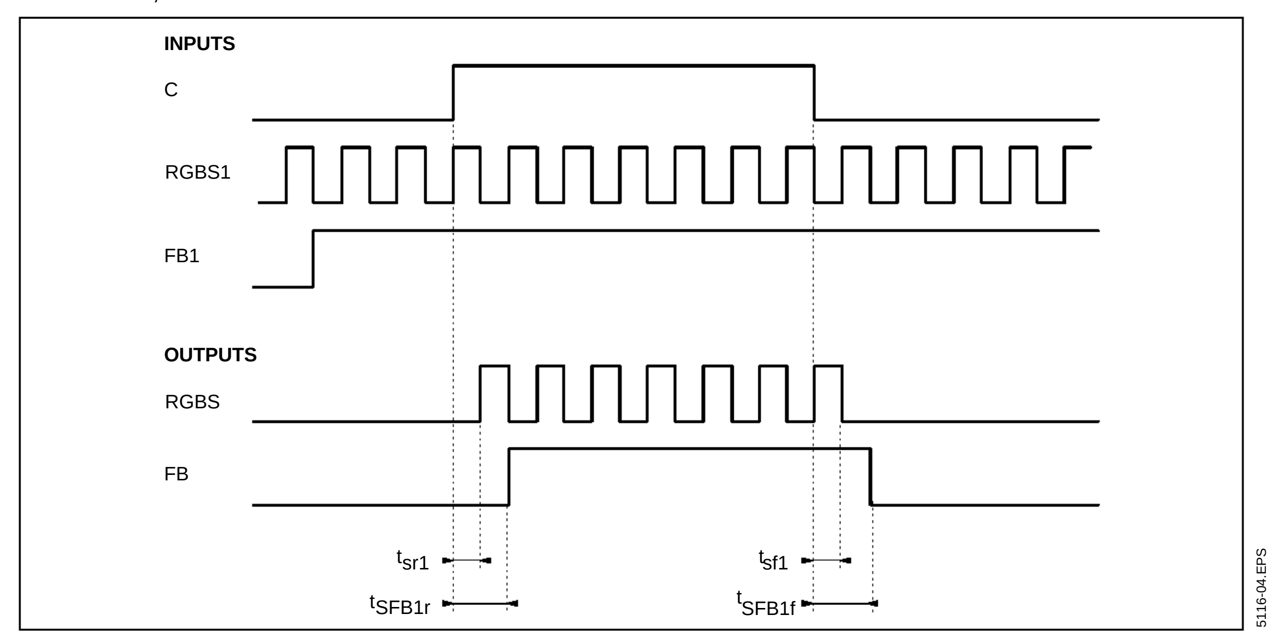
ELECTRICAL CHARACTERISTICS (continued)

Symbol	Parameter	Min.	Typ.	Max.	Unit
Video (or synchro) **Signal Switch** (pin 15) - time measurement conditions : (C pulse amplitude = 3V)					
V_S	DC Output Voltage (no input voltage) $T_{junction} = 25^oC$		0.9	1.25	V
	$T_{junction}$ stabilized		1.2		V
V_{as}	Max Output Swing Voltage	2.6			V_{pp}
Z_{ic}	DC Input Impedance		10		kΩ
Z_{cc}	Dynamic Output Impedance (input voltage $1V_{pp}$; f = 1MHz) with R_{load} = 300 Ω		10		Ω
A_V	Gain (input voltage 1 V_{pp} ; f = 1MHz)	5.5	6	6.5	dB
B	Bandwidth (– 3 dB) (input voltage 1 V_{pp})	15	20		MHz
	Input Swing		1V ± 3 dB		
t_{dc}	Delay Time between S Input and S Output (Δ input : $0.7V_{PP}$)		10		ns
t_{sr1}	Switching rise time between C input signal and S output signal (input signal on S1)		45		ns
t_{sf1}	Switching fall time between C input signal and S output signal (input signal on S1)		25		ns
t_{sr2}	Switching Rise time between C input signal and S output signal (input signal on S2)		55		
t_{sf2}	Switching fall time between C input signal and S output signal (input signal on S2)		25		
Select Input "C" (pin 3)					
V_{IL}	Low Level Input Voltage	– 0.5		1	V
V_{IH}	High Level Input Voltage	2		V_{CC}+0.5	V
I_{IL}	Low Level Input Current (V_{IL} = 1 V)	– 0.6		– 0.1	mA
I_{IH}	High Level Input Current (V_{IH} = 3 V)			0.5	mA

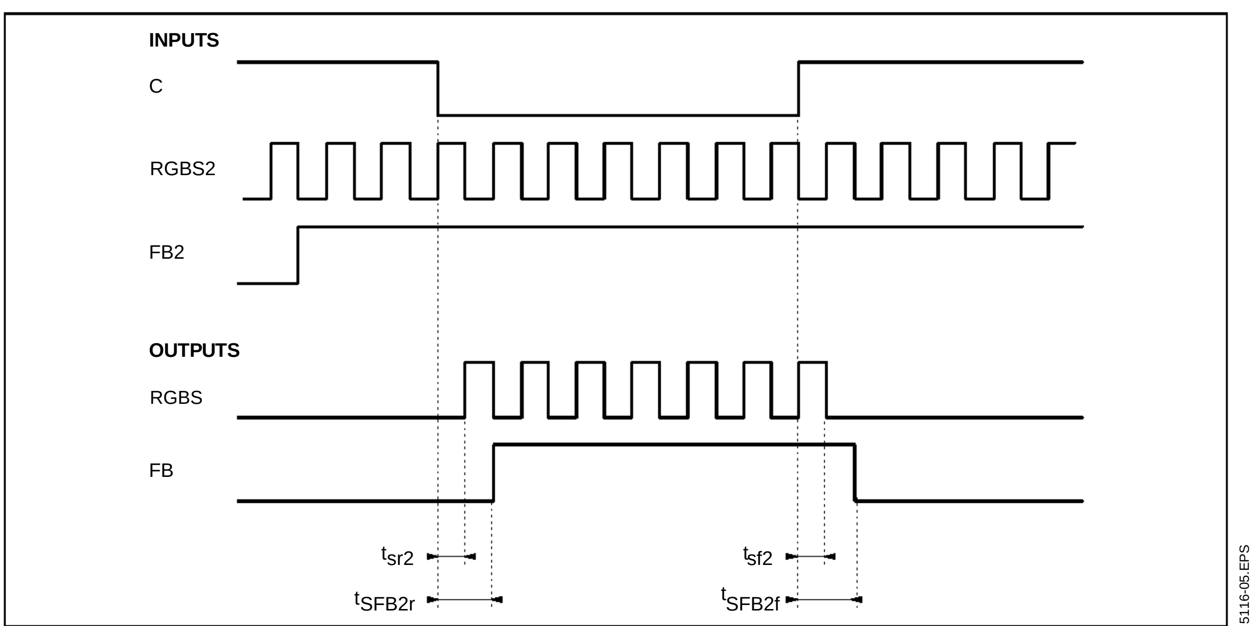
5116-04.TBL



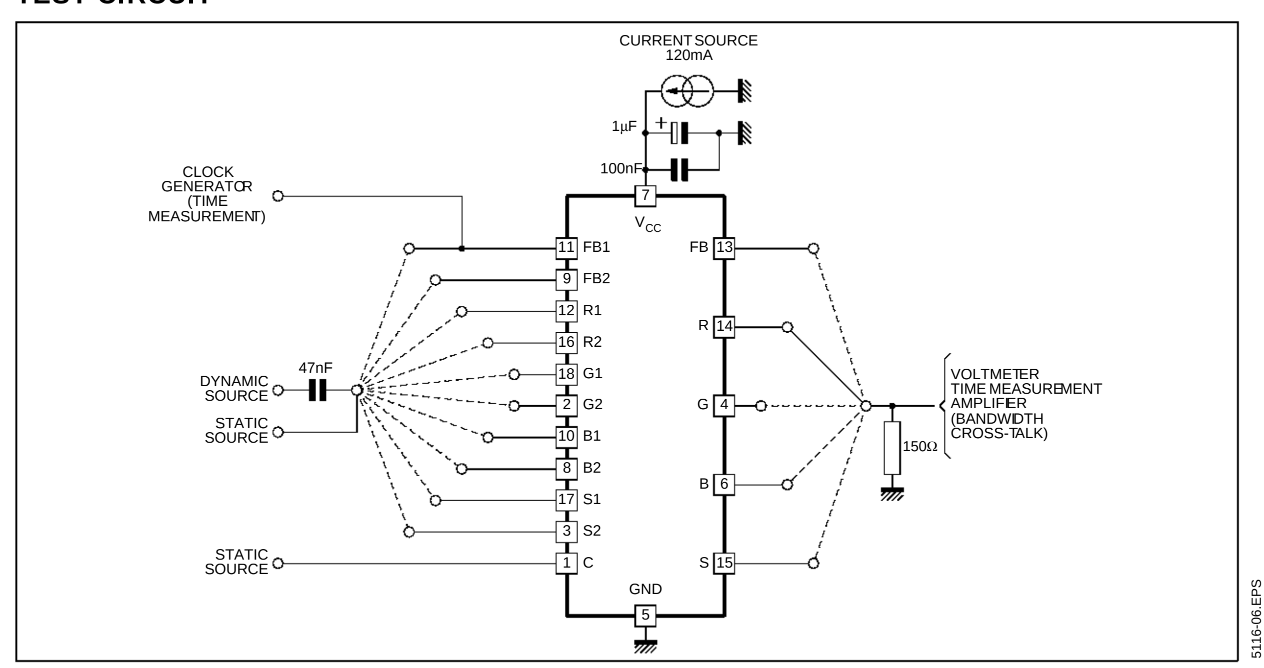
RGBS2 = 0, FB2 = 0



RGBS1 = 0, FB1 = 0

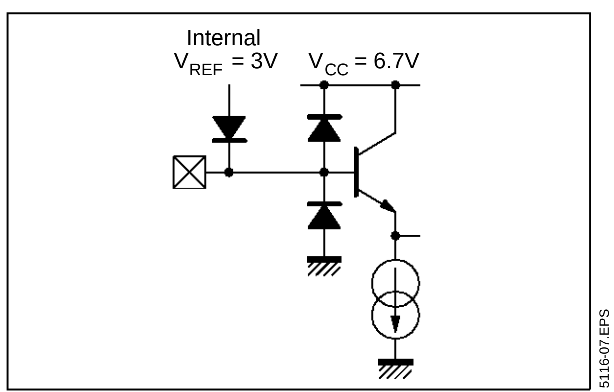


TEST CIRCUIT

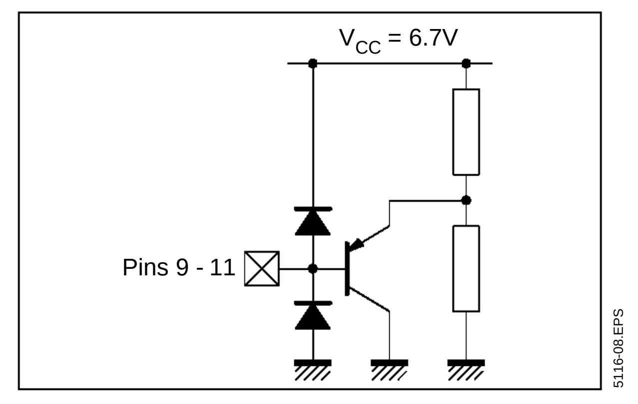


INPUTS/OUTPUTS EQUIVALENT INTERNAL DIAGRAMS

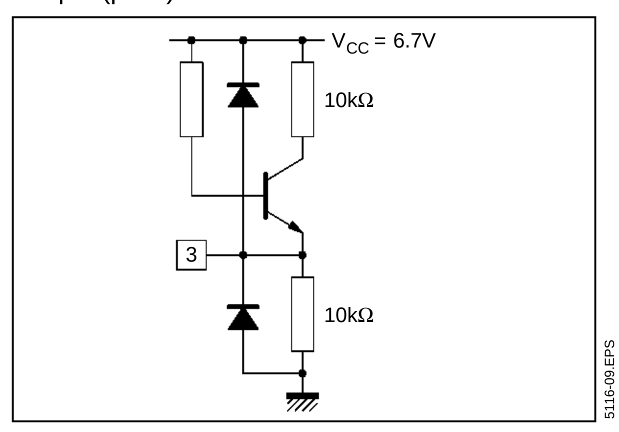
R, G, B, S inputs (pins 1, 2, 8, 10, 12, 16, 17, 18)



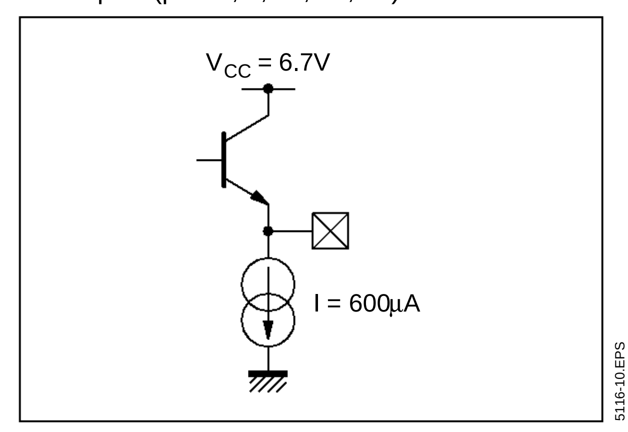
FB inputs (pins 9, 11)



C input (pin 3)

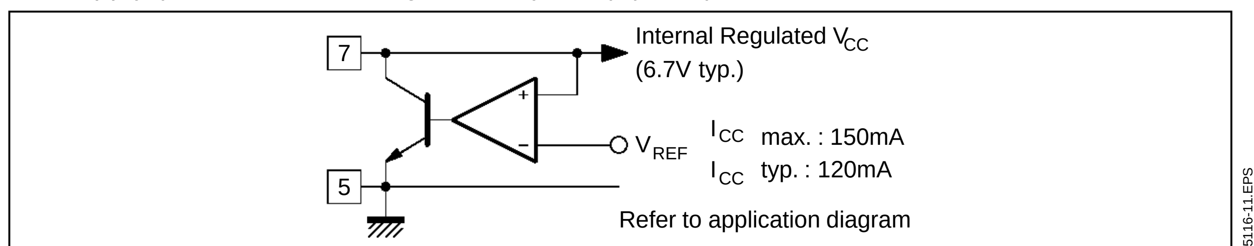


All Outputs (pins 4, 6, 13, 14, 15)

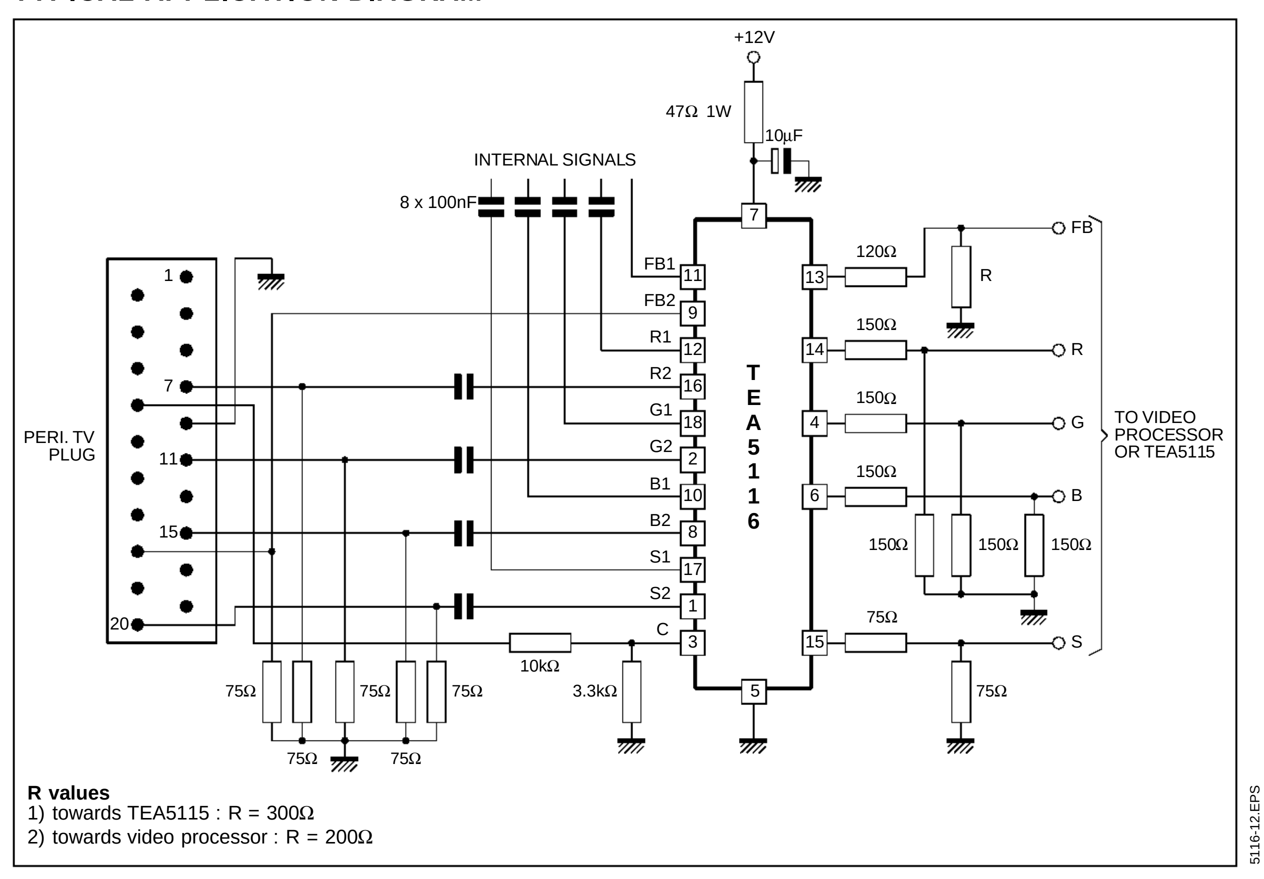


INPUTS/OUTPUTS EQUIVALENT INTERNAL DIAGRAMS (continued)

I_{CC} Supply (shunt transistor regulation system) (Pin 7)



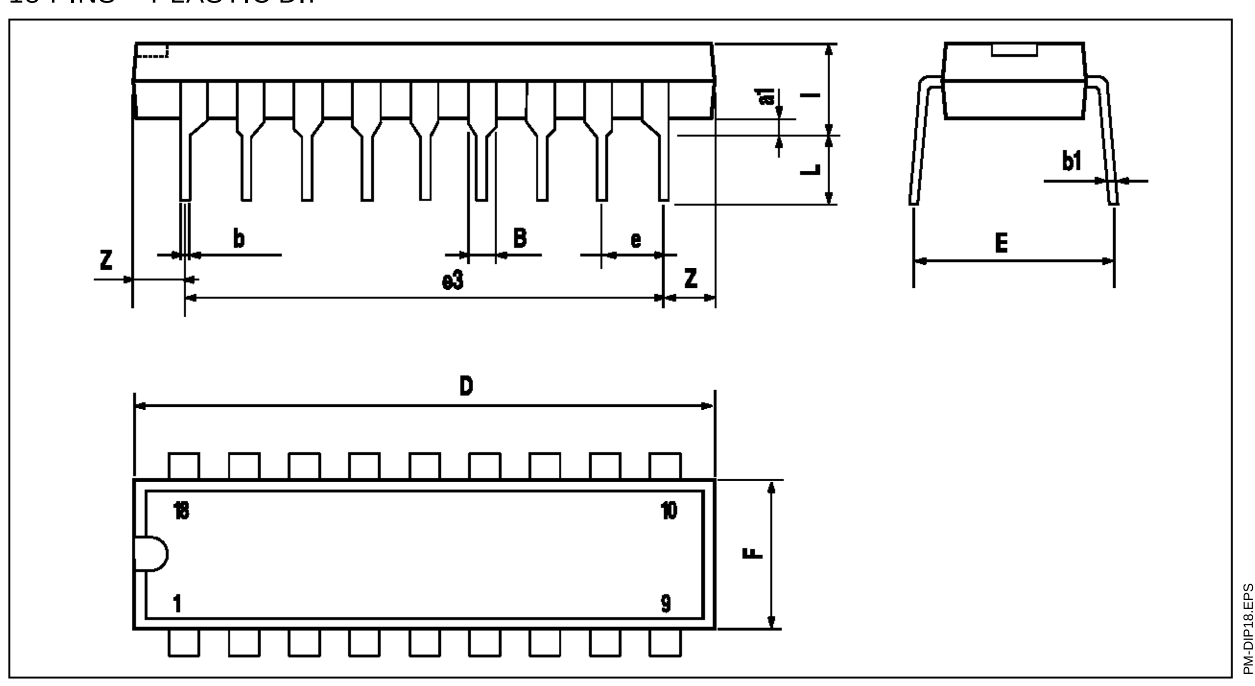
TYPICAL APPLICATION DIAGRAM



- Above given output load values are minimum values, in case of all output loading.
- Minimum output load is 150 Ω individually, provided that total supply current is less than 150 mA.

PACKAGE MECHANICAL DATA

18 PINS – PLASTIC DIP



Dimensions	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
a1	0.254			0.010		
B	1.39		1.65	0.055		0.065
b		0.46			0.018	
b1		0.25			0.010	
D			23.24			0.915
E		8.5			0.335	
e		2.54			0.100	
e3		20.32			0.800	
F			7.1			0.280
I			3.93			0.155
L		3.3			0.130	
Z		1.27	1.59		0.050	0.063

DIP18.TBL

